

REMARKS

This is in response to the Office Action dated December 23, 2003. New claims 13-14 have been added. Thus, claims 1-14 are now pending.

General

For purposes of example and without limitation, Fig. 4 of the instant application illustrates a submount 20 that supports both a first laser element 30 (e.g., emission wavelength from 640-660 nm) and a second laser element 40 (e.g., emission wavelength from 770-800 nm). Both laser elements 30 and 40 are mounted on the submount 20. Laser element 40 has a *lower/smaller temperature dependency* than laser element 30. In other words, the power of laser element 40 is less affected by a given change in temperature (e.g., a temperature change of from 25 to 50 degrees C, or a change from 60 to 70 degrees C) than is laser element 30 - compare Fig. 5 (large temperature dependency) to Fig. 6 (smaller temperature dependency).

An important feature of certain example embodiments of this invention is to locate the laser element having the lessor/smaller temperature dependency further from the mounting surface than the laser element with the larger temperature dependency. In other words, the laser element with the larger temperature dependency is located closer to the mounting surface. As explained on pages 3-4 of the instant specification, this is particularly advantageous in that it allows heat generated by the first laser element to be closer to the mounting surface and thus more easily dissipated through electrode 25; whereas the heat generated by the second laser element is dissipated via smaller electrode

35 and wire 36. Thus, it is advantageous to locate the laser element less susceptible to heat problems in an upper position farther from the mounting surface of the stem/submount or the like.

Section 112 Rejection

Claims 1-12 stand rejected under Section 112, second paragraph. It is respectfully submitted that the claim changes above address and overcome any potential issue in this regard.

Claim 1

Claim 1 stands rejected under 35 U.S.C. Section 103(a) as being allegedly unpatentable over Paoli (US 5,402,436). This Section 103(a) rejection is respectfully traversed for at least the following reasons.

Claim 1 requires "a second semiconductor laser element disposed on *top* of said first semiconductor laser element, said second semiconductor laser element having an emission wavelength different from the emission wavelength of said first semiconductor laser element and a temperature dependence lower than the temperature dependence of said first semiconductor laser element." In other words, claim 1 requires that the *laser element having the lessor temperature dependency is located further from the mounting surface than the laser element with the larger temperature dependency* (and thus the laser element with the larger temperature dependency is closer to the mounting surface). For example, see Fig. 4 of the instant application which illustrates that the laser element 40 having the lessor/smaller temperature dependency is located further from the mounting

surface than the laser element 30 with the larger temperature dependency. As explained on pages 3-4 of the instant specification for example, this is particularly advantageous in that it allows heat generated by the first laser element to be closer to the mounting surface and thus more easily dissipated through electrode 25; whereas the heat generated by the second laser element is dissipated via smaller electrode 35 and wire 36. Thus, it is advantageous to locate the laser element less susceptible to heat problems in an upper position farther from the mounting surface of the stem/submount or the like. The cited art fails to disclose or suggest the aforesaid underlined aspect of claim 1.

Paoli fails to disclose or suggest the aforesaid underlined aspect of claim 1. In particular, Paoli fails to disclose or suggest that the *laser element having the lessor temperature dependency is located further from the mounting surface than the laser element with the larger temperature dependency* (and thus the laser element with the larger temperature dependency is closer to the mounting surface). The Examiner's contention that laser chips with larger size inherently have larger temperature dependency is incorrect. This is not true. Fig. 5 of the instant application illustrates laser chips with different temperature dependencies, and has absolutely nothing to do with chip size. Fig. 5 illustrates that temperature dependency is a function of wavelength, power and current (not size).

Other Claims

Claims 7 and 10 define over Paoli in a similar manner. In particular, Paoli fails to disclose or suggest that the *laser element having the lessor temperature dependency is*

located further from the mounting surface than the laser element with the larger temperature dependency (and thus the laser element with the larger temperature dependency is closer to the mounting surface).

Claim 11 requires "a first semiconductor laser element mounted on [directly or indirectly] the mounting surface of said stem, said first semiconductor laser element having an emission wavelength in a range of 640-660 nm; and a second semiconductor laser element disposed on top of said first semiconductor laser element and having an emission wavelength in a range of 770-800 nm." In other words, claim 11 requires that a laser element having an emission wavelength in the range of from 770-800 nm be located over top of a laser element having an emission wavelength of 640-660 nm. Paoli fails to disclose or suggest this aspect of claim 11. While Paoli mentions different wavelengths, there is absolutely nothing in the cited reference which suggests these claimed wavelength ranges one over the other. Moreover, the instant specification explains unexpected results associated with these claimed wavelength ranges and stacking order, which are also not disclosed or suggested by the cited art.

Conclusion

For at least the foregoing reasons, it is respectfully requested that all rejections be withdrawn. All claims are in condition for allowance. If any minor matter remains to be resolved, the Examiner is invited to telephone the undersigned with regard to the same.

SHIOMOTO

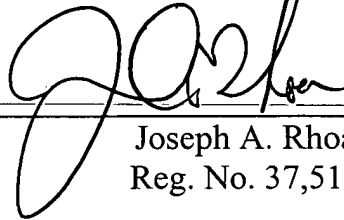
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Respectfully submitted,

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